CENTERS FOR DISEASE CONTROL

# MMWR

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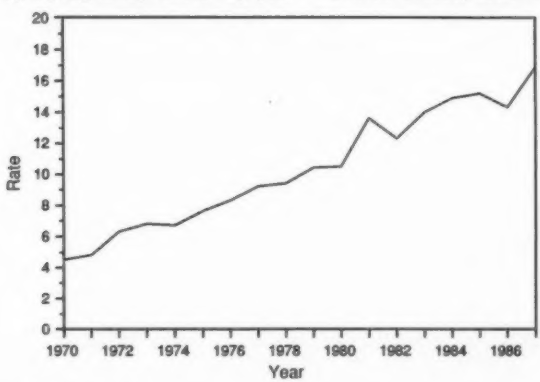
*Current Trends*

## Ectopic Pregnancy – United States, 1987

Since 1970, CDC has monitored trends in ectopic pregnancy incidence and case fatality through the National Center for Health Statistics (NCHS). The National Hospital Discharge Survey, conducted by NCHS, collects data on ectopic pregnancies; information on ectopic pregnancy deaths is obtained from death certificate data compiled by NCHS. This report presents information on the number and rate of ectopic pregnancies and the case-fatality rate in the United States for 1987.

In 1987, approximately 88,000 women were hospitalized in the United States for ectopic pregnancy, an increase of 19% over the number reported for 1986 (Table 1). From 1970, when surveillance for ectopic pregnancy began, to 1987, the rate per 1000 reported pregnancies increased nearly fourfold (Figure 1). Similarly, the rate of ectopic pregnancies per 1000 live births rose almost fivefold, and the rate per 10,000 women of reproductive age (15–44 years old) increased almost fourfold.

**FIGURE 1. Ectopic pregnancy rates,* by year – United States, 1970–1987**




*Per 1000 reported pregnancies.

*Ectopic Pregnancy – Continued*

In 1987, as in previous years, the highest rate of ectopic pregnancy per 1000 reported pregnancies occurred among women ≥30 years of age (*1*). The rate was almost 40% higher for blacks and other minority groups than for whites. The rate was highest in the South and lowest in the Northeast.

In 1987, 30 women died as a result of ectopic pregnancy, six fewer than reported for 1986 (*1*). The case-fatality rate of 3.4 deaths per 10,000 ectopic pregnancies was 31% lower than the rate of 4.9 reported for 1986.

The risk for death associated with ectopic pregnancy decreased sharply from 1970 through 1976, then more gradually from 1977 through 1987 (Figure 2). From 1970 through 1987, the case-fatality rate decreased 90%—from 35.5 to 3.4 deaths per 10,000 ectopic pregnancies.

In 1987, the risk for death from ectopic pregnancy for blacks and other minority groups was almost twice that for whites. This difference represented a slight decline from 1986 and was substantially less than for 1984 and 1985, when the rate for blacks and other minority groups was four times that for whites (*2*). In 1987, case-fatality rates were lowest in the West and highest in the South; in 1986, the highest rates were in the Northeast.

**TABLE 1. Number and rate of ectopic pregnancies, by year — United States, 1970–1987**

| | | Rate | | |
|---|---|---|---|---|
| Year | No.* | Reported pregnancies† | Live births§ | Women aged 15–44¶ |
| 1970 | 17,800 | 4.5 | 4.8 | 4.2 |
| 1971 | 19,300 | 4.8 | 5.4 | 4.4 |
| 1972 | 24,500 | 6.3 | 7.5 | 5.5 |
| 1973 | 25,600 | 6.8 | 8.2 | 5.6 |
| 1974 | 26,400 | 6.7 | 8.4 | 5.7 |
| 1975 | 30,500 | 7.6 | 9.8 | 6.5 |
| 1976 | 34,600 | 8.3 | 11.0 | 7.2 |
| 1977 | 40,700 | 9.2 | 12.3 | 8.3 |
| 1978 | 42,400 | 9.4 | 12.8 | 8.5 |
| 1979 | 49,900 | 10.4 | 14.3 | 9.9 |
| 1980 | 52,200 | 10.5 | 14.5 | 9.9 |
| 1981 | 68,000 | 13.6 | 18.7 | 12.7 |
| 1982 | 61,800 | 12.3 | 17.0 | 11.5 |
| 1983 | 69,600 | 14.0 | 19.2 | 12.6 |
| 1984 | 75,400 | 14.9 | 20.6 | 13.6 |
| 1985 | 78,400 | 15.2 | 20.9 | 14.0 |
| 1986 | 73,700 | 14.3 | 19.7 | 12.8 |
| 1987 | 88,000 | 16.8 | 23.1 | 15.3 |
| **Total** | **878,800** | **10.7** | **14.0** | **9.7** |

*Rounded to nearest 100.
†Per 1000 reported pregnancies.
§Per 1000 live births.
¶Per 10,000 women.

*Ectopic Pregnancy — Continued*

*Reported by: Pregnancy and Infant Health Br and Statistics and Computer Resources Br, Div of Reproductive Health, Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** Complications from ectopic pregnancy are one of the two leading causes of maternal death in the United States. Potential reasons for the increasing incidence of ectopic pregnancy may include heightened awareness among medical providers, improved diagnostic technology, and increased occurrence of pelvic inflammatory disease resulting from sexually transmitted diseases (*3*). Early detection of ectopic pregnancy and subsequent interventions, both medical and surgical, may account for the continued decline in overall case-fatality rates (*4–7*).

A recent study of maternal mortality in the United States from 1979 to 1986 using multiple sources for case finding identified 10% more deaths from complications of ectopic pregnancy than did national vital statistics using only death certificate data for the same period. This finding suggests that all such deaths are not being reported. In 1987, CDC established the Prospective National Pregnancy Mortality Surveillance System, which uses multiple sources of data and which should enhance the ability to more completely ascertain deaths due to complications of ectopic pregnancy.

Until risk factors that lead to ectopic pregnancy are established and controlled, early detection will be the most effective means of reducing the morbidity and mortality associated with this condition. All women should be aware of the signs and symptoms of ectopic pregnancy so that they can enter the prenatal-care system as early as possible. Approximately 15% of women who have had an ectopic pregnancy and who conceive again will have another ectopic pregnancy (*8*). Emergency room and other physicians must consider and rule out ectopic pregnancy in the differential diagnosis of women of reproductive age who present with symptoms of pelvic and abdominal pain and amenorrhea with vaginal spotting or bleeding.

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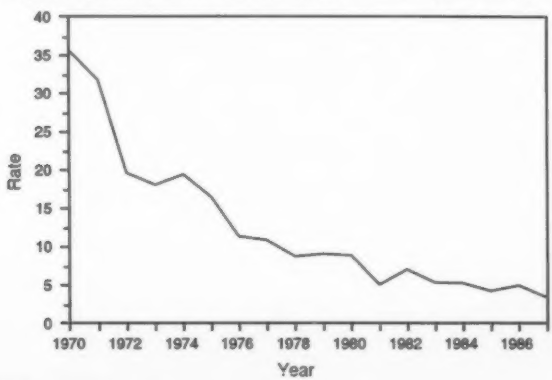
**FIGURE 2. Ectopic pregnancy death rates,* by year — United States, 1970–1987**




*Per 10,000 ectopic pregnancies.

*Ectopic Pregnancy – Continued*

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## Update: Filovirus Infection Associated with Contact with Nonhuman Primates or Their Tissues

Since November 1989, outbreaks of filovirus infection have been described among cynomolgus monkeys (*Macaca fascicularis*) imported from the Philippines into quarantine facilities in Virginia, Pennsylvania, and Texas (*1–3*). Serologic evidence of filovirus infection, including three seroconversions, among workers in these facilities (*4*) confirms that virus can be transmitted to humans during care and management of quarantined animals.

To further assess the health risk to humans posed by the presence of filoviruses in animals in facilities for nonhuman primates in the United States, 550 persons with varying levels of exposure to monkeys (or monkey body fluids or tissues) were tested by an indirect immunofluorescence assay (IFA) and a confirmatory Western blot assay. Of these persons, 42 (7.6%), including seven reported previously (*4,5*), were positive (IFA titer ≥16, Western blot confirmed) to one or more of the four filovirus test antigens used (Ebola-Zaire, Ebola-Sudan, Filovirus-Reston, Marburg) as of June 18, 1990. Seropositivity was not evenly distributed: 26 (9.8%) of 266 import quarantine facility staff members were seropositive, and 16 (5.6%) of 284 other persons having contact with monkeys (or with monkey body fluids or tissues) outside of import quarantine facilities were seropositive. None of the 42 seropositive persons reported having had an illness considered to be caused by a filovirus.

To provide a perspective for interpreting antibody seropositivity rates for persons having contact with monkeys (or monkey body fluids or tissues), serum specimens from 449 persons from throughout the United States randomly selected from a cross-sectional adult primary-care outpatient population were tested by the same IFA and Western blot assays. Of these, 12 (2.7%) were positive.

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**Editorial Note:** The filoviruses isolated in 1989 and 1990 from cynomolgus monkeys in Virginia and Pennsylvania are morphologically identical but antigenically and genetically distinct from Marburg virus isolated in Europe in 1967 (*6*) and Ebola virus isolated during human epidemics in Africa in the 1970s (*7–10*). Severe hemorrhagic fever and high death rates marked the European outbreak and the African epidemics, but human illness has not been documented in association with the recent occupa-

*Filovirus Infection – Continued*

tionally acquired infections in the United States. Serologic data confirm that routine contact with and handling of nonhuman primates (or their body fluids or tissues) in quarantine facilities increase the risk for infection of workers. Recent actions have been taken to increase the level of worker protection during importation and import quarantine (*2,11*).

The background seropositivity rate for persons from throughout the United States chosen randomly from an adult primary-care outpatient population remains unexplained. One possibility is antigenic crossreactivity between the known filoviruses and another, as yet undetermined, antigen. Further investigations are in progress to clarify this. Investigations are also in progress to define risk factors for occupationally acquired infection and to assess the risk for infection of household contacts of infected persons.

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## Hepatitis B Screening and Follow-up Vaccination of Infants of Carrier Mothers – Atlanta, 1988 and 1989

Perinatal transmission is one of the most efficient modes of spread of hepatitis B virus (HBV). Infants born to mothers who are positive for both hepatitis B surface antigen (HBsAg) and hepatitis B e antigen (HBeAg) have a 70%–90% risk for HBV infection; 85%–90% of infected infants will remain chronically infected (*1*). For infants born to HBsAg-positive, HBeAg-negative mothers, the risk for chronic infection is as great as 31% (*2–5*). Children born to HBsAg-positive mothers not infected at birth have a 30%–60% risk for acquiring infection during the first 5 years of life (depending on the HBeAg status of the mother) (*3,6*). In 1988, the Immunization Practices Advisory Committee (ACIP) recommended HBsAg screening of all pregnant women during an early prenatal visit and treatment of infants born to HBsAg-positive mothers with hepatitis B immune globulin (HBIG) at birth and hepatitis B vaccine at birth, 1 month, and 6 months of age (*7*). To assess the implementation of these

*Hepatitis Screening – Continued*

recommendations, records of treatment and follow-up of infants born to HBV-carrier* mothers were reviewed at a hospital in Atlanta.

The hospital is an 864-bed public urban hospital mainly serving the greater metropolitan Atlanta area; approximately 10,000 women are seen each year at the hospital's prenatal clinics. In July 1988, universal hepatitis screening of pregnant women was begun at the prenatal clinics. From July 1, 1988, through June 30, 1989, 85 HBsAg-positive women were identified through prenatal hepatitis screening at the hospital. This report presents findings for the 43 women who were HBsAg-positive, delivered their infants at the hospital, and resided in either Fulton or DeKalb counties.

At delivery, HBIG and the first dose of hepatitis B vaccine were administered to 42 and 41 of the 43 infants, respectively. One infant received the first dose of hepatitis B vaccine at 1 month of age; records and treatment information for one infant were unavailable. The 41 infants who received hepatitis B prophylaxis in the hospital were scheduled for vaccination follow-up by their respective county clinic.

The second dose of vaccine was administered to 39 of the infants, 33 of whom received their second dose before 2 months of age. Twenty-four of the 32 infants who were at least 6 months old as of March 15, 1990, received their third dose of vaccine; 18 of the 24 received the third dose within 1 month of their vaccine due date. The hepatitis B vaccination completion rate was comparable to the 73% completion rate for the third dose of diphtheria and tetanus toxoids and pertussis vaccine in the same infants. None of the infants in this study has been tested for anti-HBs.

In DeKalb County, a computer-based system is used to track childhood vaccination records, and hepatitis B vaccine is available at all the local health centers; 11 (92%) of 12 infants identified in that county completed the vaccine series. In contrast, 13 (65%) of 20 infants completed the vaccination series in Fulton County, which uses a manual "tickler file" and makes hepatitis B vaccine available at one vaccination clinic.

HBsAg tests were repeated during the prenatal period for 35 women who were identified as HBsAg-positive. Of these, 10 (29%) seroconverted to HBsAg-negative before delivery; five of the 10 women developed antibody to HBsAg or had liver enzyme elevations that resolved by the time of seroconversion, suggesting recent acute HBV infection.

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**Editorial Note**: In the United States, an estimated 18,775 infants are born to HBsAg-positive women each year. Without adequate hepatitis B prophylaxis at delivery, an estimated 4000 of these infants can become chronically infected with HBV (CDC, unpublished data, 1989). More than 90% of such perinatally acquired HBV infections can be prevented through administration of HBIG and hepatitis B vaccine as soon as possible after birth, followed by completion of the hepatitis B vaccine series at 1 and 6 months of age (*7*). Testing infants for HBsAg and anti-HBs is also recommended at 12–15 months of age to monitor the effectiveness of therapy (*7*). With implementation of the ACIP recommendation that all pregnant women be screened for HBsAg, state vaccination programs must ensure that infants born to HBV-carrier mothers

*A person who is either HBsAg-positive on at least two occasions (at least 6 months apart) or who is HBsAg-positive and IgM anti–HBc-negative when a single specimen is tested.

*Hepatitis Screening — Continued*

receive complete hepatitis B prophylaxis as a part of their routine childhood vaccination program.

Hepatitis B screening and vaccination programs for infants of carrier mothers must address specific operational issues. For example, before infants can receive their second and third doses of vaccine, information about the need for hepatitis B vaccine must be conveyed from the newborn nurseries to the infants' pediatric-care providers. For those infants who receive primary and/or preventive health services in the public sector, information is usually transmitted from the hospital where the infant was born to the county health department and/or the local health-care center. These programs may then be responsible for tracking HBV-carrier mothers and ensuring that infants receive three doses of vaccine.

Health education efforts must be directed at HBsAg-positive mothers to emphasize the importance of hepatitis B prevention; for example, vaccination reminders may be provided to HBsAg-positive mothers when they are discharged from the hospital. Local health centers and county health departments should incorporate hepatitis B vaccination into the tracking systems used to follow infants for routine childhood vaccinations to assure a high rate of follow-up. In addition, personnel in pediatric well-baby and vaccination clinics should identify infants for whom hepatitis B vaccine is indicated and ensure these infants complete the vaccine series. Centralized immunization files can be used to follow contacts of HBV-carrier women identified by prenatal screening (i.e., household members and sex partners), for whom HB vaccine is also recommended (*1*).

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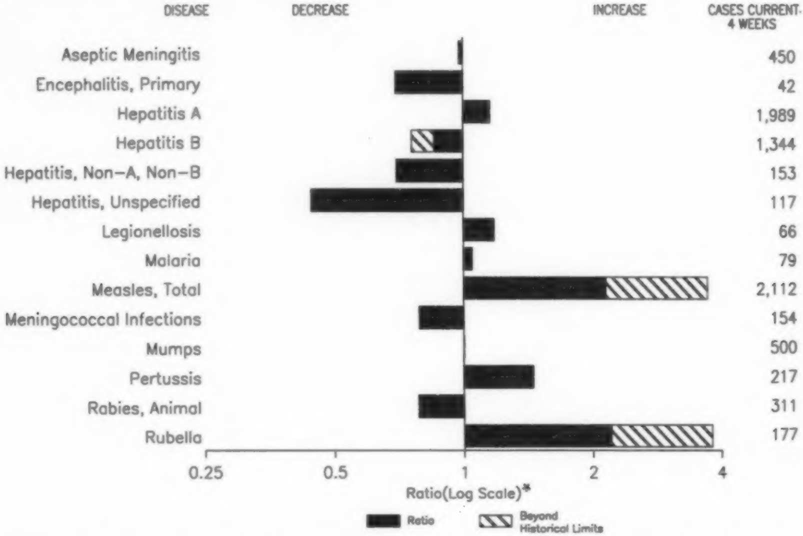
## Arboviral Infections of the Central Nervous System — United States, 1989

In 1989, state and local health departments reported 108 cases of arboviral encephalitis to CDC. An outbreak of St. Louis encephalitis (SLE) in California's Central Valley was the largest outbreak in the state since 1959. Sporadically occurring SLE cases were reported elsewhere from Los Angeles County (one case); Lyon County, Nevada (one case); and Houston (four cases, one fatal) (Figure 1, page 413). In an eastern equine encephalitis (EEE) outbreak on the Atlantic and Gulf coasts, 194 equine

*(Continued on page 413)*

**FIGURE I. Notifiable disease reports, comparison of 4-week totals ending June 16, 1990, with historical data — United States**




*Ratio of current 4-week total to mean of 15 4-week totals (from comparable, previous, and subsequent 4-week periods for past 5 years).

**TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending June 16, 1990 (24th Week)**

| | Cum. 1990 | | Cum. 1990 |
|---|---|---|---|
| AIDS | 19,628 | Plague | - |
| Anthrax | - | Poliomyelitis, Paralytic* | - |
| Botulism: Foodborne | 1 | Psittacosis | 64 |
| Infant | 24 | Rabies, human | 1 |
| Other | 2 | Syphilis: civilian | 22,112 |
| Brucellosis | 29 | military | 124 |
| Cholera | 1 | Syphilis, congenital, age < 1 year | - |
| Congenital rubella syndrome | 1 | Tetanus | 23 |
| Diphtheria | 1 | Toxic shock syndrome | 150 |
| Encephalitis, post-infectious | 50 | Trichinosis | 12 |
| Gonorrhea: civilian | 301,187 | Tuberculosis | 9,318 |
| military | 4,157 | Tularemia | 30 |
| Leprosy | 86 | Typhoid fever | 155 |
| Leptospirosis | 17 | Typhus fever, tickborne (RMSF) | 105 |
| Measles: imported | 645 | | |
| indigenous | 10,503 | | |

*Three cases of suspected poliomyelitis have been reported in 1990. Five of 13 suspected cases in 1989 were confirmed and all were vaccine-associated.

**TABLE II. Cases of specified notifiable diseases, United States, weeks ending June 16, 1990, and June 17, 1989 (24th Week)**

| Reporting Area | AIDS | Aseptic Meningitis | Encephalitis | | Gonorrhea (Civilian) | | Hepatitis (Viral), by type | | | | Legionellosis | Leprosy |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1989 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 |
| UNITED STATES | 19,628 | 2,290 | 284 | 50 | 301,187 | 305,924 | 13,527 | 9,357 | 922 | 796 | 493 | 86 |
| NEW ENGLAND | 781 | 94 | 9 | - | 8,262 | 8,843 | 273 | 468 | 30 | 34 | 21 | 5 |
| Maine | 36 | 2 | 1 | - | 97 | 132 | 5 | 18 | 4 | 1 | 1 | - |
| N.H. | 40 | 10 | - | - | 93 | 74 | 5 | 22 | 3 | 2 | 3 | - |
| Vt. | 7 | 11 | 2 | - | 28 | 33 | 3 | 26 | 3 | - | 4 | - |
| Mass. | 439 | 31 | 2 | - | 3,244 | 3,423 | 200 | 292 | 12 | 30 | 9 | 4 |
| R.I. | 39 | 27 | - | - | 483 | 599 | 27 | 26 | - | 1 | 4 | 1 |
| Conn. | 220 | 13 | 4 | - | 4,317 | 4,582 | 33 | 84 | 8 | - | - | - |
| MID. ATLANTIC | 6,067 | 266 | 22 | 4 | 42,030 | 49,507 | 2,019 | 1,457 | 107 | 62 | 137 | 17 |
| Upstate N.Y. | 824 | 116 | 19 | 1 | 6,211 | 7,409 | 448 | 329 | 19 | 18 | 58 | 1 |
| N.Y. City | 3,397 | 63 | 2 | 1 | 18,244 | 20,647 | 246 | 439 | 17 | 29 | 22 | 12 |
| N.J. | 1,233 | - | 1 | - | 6,125 | 6,867 | 216 | 331 | 28 | - | 19 | 3 |
| Pa. | 613 | 87 | - | 2 | 11,450 | 14,584 | 1,109 | 358 | 43 | 15 | 38 | 1 |
| E.N. CENTRAL | 1,312 | 348 | 65 | 8 | 57,418 | 53,997 | 959 | 1,169 | 59 | 52 | 116 | - |
| Ohio | 286 | 84 | 15 | 3 | 17,655 | 13,937 | 110 | 216 | 16 | 8 | 44 | - |
| Ind. | 116 | 63 | 2 | 3 | 4,940 | 4,056 | 64 | 240 | 3 | 14 | 19 | - |
| Ill. | 571 | 59 | 22 | 2 | 17,914 | 17,111 | 438 | 189 | 18 | 14 | 8 | - |
| Mich. | 219 | 123 | 24 | - | 13,750 | 14,335 | 189 | 328 | 19 | 16 | 32 | - |
| Wis. | 120 | 19 | 2 | - | 3,159 | 4,558 | 158 | 196 | 3 | - | 13 | - |
| W.N. CENTRAL | 502 | 98 | 21 | 1 | 16,097 | 13,900 | 764 | 433 | 58 | 15 | 28 | - |
| Minn. | 89 | 9 | 9 | 1 | 2,043 | 1,410 | 124 | 56 | 17 | - | - | - |
| Iowa | 20 | 11 | 2 | - | 1,206 | 1,046 | 164 | 33 | 5 | 2 | 2 | - |
| Mo. | 304 | 42 | 1 | - | 9,482 | 8,240 | 259 | 260 | 17 | 10 | 17 | - |
| N. Dak. | - | 7 | - | - | 47 | 64 | 7 | 4 | 2 | 1 | - | - |
| S. Dak. | 1 | 3 | 2 | - | 100 | 124 | 44 | 4 | 2 | - | - | - |
| Nebr. | 27 | 11 | 3 | - | 800 | 778 | 46 | 19 | 3 | - | 4 | - |
| Kans. | 61 | 15 | 4 | - | 2,419 | 2,238 | 120 | 57 | 12 | 2 | 5 | - |
| S. ATLANTIC | 4,094 | 551 | 69 | 14 | 85,847 | 83,247 | 1,655 | 1,736 | 144 | 113 | 70 | 3 |
| Del. | 40 | 21 | 3 | - | 1,417 | 1,320 | 69 | 49 | 5 | 1 | 4 | - |
| Md. | 388 | 66 | 8 | 1 | 9,108 | 9,011 | 641 | 237 | 18 | 6 | 21 | 1 |
| D.C. | 302 | 2 | - | - | 5,660 | 5,502 | 12 | 28 | 4 | - | - | - |
| Va. | 333 | 80 | 24 | 2 | 7,956 | 7,003 | 137 | 105 | 23 | 82 | 7 | - |
| W. Va. | 31 | 10 | 6 | - | 615 | 616 | 11 | 47 | 3 | 1 | 1 | - |
| N.C. | 260 | 50 | 20 | - | 13,878 | 12,783 | 331 | 497 | 59 | - | 12 | 1 |
| S.C. | 160 | 8 | - | - | 6,699 | 7,070 | 21 | 279 | 10 | 6 | 10 | - |
| Ga. | 575 | 80 | 3 | 1 | 19,109 | 16,586 | 164 | 203 | 3 | 6 | 11 | - |
| Fla. | 2,005 | 234 | 5 | 10 | 21,405 | 23,356 | 269 | 291 | 19 | 11 | 4 | 1 |
| E.S. CENTRAL | 432 | 199 | 24 | 1 | 24,640 | 23,831 | 184 | 716 | 56 | 4 | 40 | - |
| Ky. | 76 | 48 | 6 | - | 2,685 | 2,292 | 47 | 251 | 16 | 3 | 17 | - |
| Tenn. | 144 | 39 | 13 | 1 | 7,646 | 7,785 | 89 | 374 | 26 | - | 12 | - |
| Ala. | 100 | 78 | 5 | - | 8,166 | 7,484 | 47 | 87 | 12 | - | 11 | - |
| Miss. | 112 | 34 | - | - | 6,143 | 6,270 | 1 | 4 | 2 | 1 | - | - |
| W.S. CENTRAL | 1,903 | 191 | 10 | 6 | 30,553 | 31,675 | 1,377 | 829 | 71 | 122 | 31 | 21 |
| Ark. | 157 | 5 | - | - | 3,902 | 3,193 | 240 | 41 | 5 | 11 | 7 | - |
| La. | 330 | 23 | 3 | - | 6,155 | 6,634 | 72 | 135 | 1 | 4 | 10 | - |
| Okla. | 96 | 17 | 1 | 5 | 2,753 | 2,697 | 279 | 66 | 14 | 11 | 10 | - |
| Tex. | 1,320 | 146 | 6 | 1 | 17,743 | 19,151 | 786 | 587 | 51 | 96 | 4 | 21 |
| MOUNTAIN | 471 | 101 | 10 | - | 5,456 | 6,440 | 2,126 | 699 | 66 | 64 | 25 | - |
| Mont. | 7 | 2 | - | - | 83 | 96 | 55 | 38 | 2 | 4 | 1 | - |
| Idaho | 14 | - | - | - | 54 | 96 | 41 | 43 | 8 | - | 3 | - |
| Wyo. | 2 | 1 | 1 | - | 80 | 50 | 22 | 8 | 4 | 1 | - | - |
| Colo. | 131 | 21 | 2 | - | 1,274 | 1,391 | 131 | 80 | 19 | 22 | 3 | - |
| N. Mex. | 40 | 4 | - | - | 565 | 644 | 334 | 76 | 3 | 2 | 3 | - |
| Ariz. | 161 | 47 | 4 | - | 2,466 | 2,372 | 1,192 | 236 | 16 | 27 | 8 | - |
| Utah | 51 | 16 | - | - | 188 | 199 | 173 | 46 | 10 | 3 | 2 | - |
| Nev. | 65 | 10 | 3 | - | 746 | 1,592 | 178 | 172 | 4 | 5 | 5 | - |
| PACIFIC | 4,066 | 442 | 54 | 16 | 30,884 | 34,484 | 4,170 | 1,850 | 331 | 329 | 25 | 40 |
| Wash. | 273 | - | 3 | 1 | 2,583 | 2,865 | 714 | 290 | 62 | 11 | 8 | 2 |
| Oreg. | 152 | - | - | - | 1,186 | 1,374 | 444 | 209 | 19 | 6 | - | - |
| Calif. | 3,560 | 401 | 47 | 14 | 26,417 | 29,589 | 2,875 | 1,287 | 243 | 308 | 16 | 32 |
| Alaska | 17 | 10 | 3 | - | 478 | 424 | 87 | 32 | 3 | - | - | - |
| Hawaii | 64 | 31 | 1 | 1 | 220 | 232 | 50 | 32 | 4 | 4 | 1 | 6 |
| Guam | 1 | - | - | - | 88 | 70 | 4 | 1 | - | 6 | - | - |
| P.R. | 799 | 36 | 4 | - | 425 | 538 | 86 | 145 | 2 | 21 | - | - |
| V.I. | 5 | - | - | - | 199 | 318 | 1 | 7 | - | - | - | - |
| Amer. Samoa | - | 1 | - | - | 28 | 11 | 13 | - | - | - | - | 7 |
| C.N.M.I. | - | - | - | - | 66 | 41 | 4 | 2 | - | - | - | 1 |

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of the Northern Mariana Islands

**TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 16, 1990, and June 17, 1989 (24th Week)**

| Reporting Area | Malaria | Measles (Rubeola): Indigenous | | Measles (Rubeola): Imported* | | Measles (Rubeola): Total | Meningococcal Infections | Mumps | | Pertussis | | | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1990 | 1990 | Cum. 1990 | 1990 | Cum. 1990 | Cum. 1989 | Cum. 1990 | 1990 | Cum. 1990 | 1990 | Cum. 1990 | Cum. 1989 | 1990 | Cum. 1990 | Cum. 1989 |
| UNITED STATES | 462 | 743 | 10503 | 25 | 645 | 7,337 | 1,334 | 155 | 2,967 | 79 | 1,323 | 1,089 | 43 | 540 | 195 |
| NEW ENGLAND | 40 | 11 | 156 | 1 | 16 | 279 | 87 | 8 | 30 | 3 | 158 | 214 | - | 5 | 5 |
| Maine | - | - | 27 | - | - | - | 8 | - | - | - | 5 | 4 | - | - | - |
| N.H. | 4 | - | - | - | 8 | 8 | 3 | 1 | 7 | - | 10 | 5 | - | 1 | 3 |
| Vt. | 4 | - | - | - | 1 | 1 | 6 | - | 1 | - | 6 | 6 | - | - | 1 |
| Mass. | 23 | 11 | 15 | 1† | 2 | 40 | 45 | - | 7 | 3 | 127 | 188 | - | - | 1 |
| R.I. | 3 | - | 27 | - | 3 | 37 | 5 | 1 | 5 | - | - | 2 | - | 1 | - |
| Conn. | 6 | - | 87 | - | 2 | 193 | 20 | 6 | 10 | - | 10 | 9 | - | 3 | - |
| MID. ATLANTIC | 97 | 27 | 665 | 1 | 136 | 699 | 197 | 13 | 175 | 4 | 296 | 69 | - | 2 | 12 |
| Upstate N.Y. | 20 | 4 | 159 | 1† | 102 | 132 | 77 | 7 | 79 | 2 | 238 | 33 | - | 1 | 3 |
| N.Y. City | 33 | - | 100 | - | 18 | 59 | 25 | - | - | - | - | 2 | - | - | 7 |
| N.J. | 29 | 2 | 90 | - | 9 | 379 | 41 | - | 30 | - | 13 | 21 | - | - | 2 |
| Pa. | 15 | 21 | 316 | - | 7 | 129 | 54 | 6 | 66 | 2 | 45 | 13 | - | 1 | - |
| E.N. CENTRAL | 23 | - | 2,377 | - | 140 | 1,739 | 177 | 5 | 319 | 13 | 261 | 124 | - | 27 | 21 |
| Ohio | 5 | - | 213 | - | 2 | 561 | 59 | - | 67 | - | 73 | 1 | - | - | 3 |
| Ind. | 1 | - | 275 | - | 1 | 33 | 16 | - | 13 | 13 | 47 | 8 | - | - | - |
| Ill. | 8 | - | 910 | - | 10 | 1,034 | 44 | - | 102 | - | 75 | 56 | - | 17 | 16 |
| Mich. | 6 | - | 311 | - | 125 | 9 | 38 | 5 | 106 | - | 35 | 20 | - | 9 | 1 |
| Wis. | 3 | - | 668 | - | 2 | 102 | 20 | - | 31 | - | 31 | 39 | - | 1 | 1 |
| W.N. CENTRAL | 6 | 47 | 563 | 1 | 13 | 501 | 45 | 5 | 84 | 2 | 42 | 30 | 1 | 6 | 4 |
| Minn. | 1 | - | 163 | - | 3 | 4 | 10 | - | - | - | 6 | - | - | 1 | - |
| Iowa | - | - | 23 | 1§ | 1 | 5 | 1 | 1 | 13 | 2 | 6 | 10 | 1 | 4 | - |
| Mo. | 4 | - | 61 | - | - | 303 | 16 | 1 | 40 | - | 24 | 18 | - | - | 3 |
| N. Dak. | - | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 | - |
| S. Dak. | - | 1 | 15 | - | 8 | - | 2 | - | - | - | 1 | 1 | - | - | - |
| Nebr. | - | - | 95 | - | 1 | 110 | 5 | - | 2 | - | 1 | - | - | - | - |
| Kans. | 1 | 46 | 206 | - | - | 79 | 11 | 3 | 29 | - | 3 | 1 | - | - | 1 |
| S. ATLANTIC | 106 | 34 | 585 | 11 | 100 | 364 | 246 | 82 | 1,200 | 5 | 128 | 85 | - | 12 | 7 |
| Del. | 2 | - | 8 | - | 3 | 37 | 1 | - | 3 | - | 2 | 1 | - | - | - |
| Md. | 28 | 17 | 112 | - | 12 | 50 | 26 | 45 | 696 | - | 35 | 8 | - | 1 | 2 |
| D.C. | 10 | - | 9 | - | 7 | 9 | 11 | - | 20 | - | 14 | - | - | 1 | - |
| Va. | 29 | - | 65 | - | 2 | 17 | 29 | 8 | 75 | - | 12 | 6 | - | - | - |
| W. Va. | 1 | - | 6 | - | - | 28 | 10 | 1 | 41 | - | 9 | 11 | - | - | - |
| N.C. | 7 | - | 3 | 7†§ | 16 | 167 | 37 | 21 | 153 | 5 | 29 | 18 | - | - | 1 |
| S.C. | - | 1 | 4 | - | - | - | 19 | 2 | 21 | - | 5 | - | - | - | - |
| Ga. | 9 | 8 | 14 | 4†§ | 16 | - | 49 | - | 56 | - | 14 | 10 | - | - | - |
| Fla. | 20 | 8 | 364 | - | 44 | 56 | 64 | 5 | 135 | - | 8 | 31 | - | 10 | 4 |
| E.S. CENTRAL | 11 | 8 | 92 | - | 2 | 86 | 80 | - | 61 | 1 | 68 | 42 | - | 1 | 2 |
| Ky. | 2 | 1 | 15 | - | - | 2 | 23 | - | - | - | - | 1 | - | - | - |
| Tenn. | 6 | - | 34 | - | - | 43 | 31 | - | 30 | - | 28 | 15 | - | 1 | 2 |
| Ala. | 3 | 7 | 14 | - | 2 | 41 | 24 | - | 9 | 1 | 36 | 22 | - | - | - |
| Miss. | - | - | 29 | - | - | - | 2 | N | N | - | 4 | 4 | - | - | - |
| W.S. CENTRAL | 21 | 563 | 2,328 | 9 | 75 | 2,632 | 97 | 17 | 520 | 5 | 30 | 42 | - | 1 | 11 |
| Ark. | 1 | 2 | 10 | 9§ | 28 | 2 | 11 | 1 | 120 | 1 | 2 | 10 | - | 1 | - |
| La. | - | - | 10 | - | - | 6 | 25 | - | 82 | 2 | 7 | 4 | - | - | 5 |
| Okla. | 5 | 2 | 144 | - | - | 84 | 9 | 1 | 98 | 2 | 21 | 13 | - | - | 1 |
| Tex. | 15 | 559 | 2,164 | - | 47 | 2,540 | 52 | 15 | 220 | - | - | 15 | - | - | 5 |
| MOUNTAIN | 13 | 50 | 511 | 2 | 70 | 189 | 42 | 11 | 230 | 32 | 141 | 350 | 4 | 85 | 32 |
| Mont. | 1 | - | - | - | 1 | 13 | 9 | - | - | 18 | 23 | 9 | - | 13 | 1 |
| Idaho | 3 | - | 15 | 1§ | 6 | 2 | 6 | 3 | 113 | - | 25 | 40 | 1 | 45 | 30 |
| Wyo. | - | - | - | - | 11 | - | - | - | 2 | - | - | - | - | - | - |
| Colo. | 1 | - | 48 | - | 33 | 59 | 12 | 3 | 18 | 1 | 50 | 21 | - | 3 | - |
| N. Mex. | 2 | - | 80 | - | 4 | 30 | 4 | N | N | - | 7 | 6 | - | - | - |
| Ariz. | 6 | 50 | 173 | 1§ | 12 | 47 | 3 | 5 | 81 | 13 | 26 | 268 | 3 | 22 | - |
| Utah | - | - | 44 | - | - | 36 | 4 | - | 4 | - | 6 | 5 | - | 1 | - |
| Nev. | - | - | 151 | - | 3 | 2 | 4 | - | 12 | - | 4 | 1 | - | 1 | 1 |
| PACIFIC | 145 | 3 | 3,226 | - | 93 | 848 | 363 | 14 | 348 | 14 | 199 | 133 | 38 | 401 | 101 |
| Wash. | 14 | - | 176 | - | 68 | 33 | 42 | 2 | 36 | 1 | 55 | 29 | - | - | - |
| Oreg. | 9 | - | - | - | - | 12 | 38 | N | N | - | 3 | 5 | - | - | 1 |
| Calif. | 119 | - | 2,966 | - | 22 | 781 | 273 | 11 | 306 | 12 | 122 | 95 | 37 | 393 | 80 |
| Alaska | 1 | - | 78 | - | 2 | - | 6 | - | - | - | - | - | - | - | - |
| Hawaii | 2 | 3 | 6 | - | 1 | 22 | 4 | 1 | 6 | 1 | 19 | 4 | 1 | 8 | 20 |
| Guam | 1 | U | - | U | 1 | 1 | - | U | 1 | U | - | 1 | U | - | - |
| P.R. | 1 | - | 808 | - | - | 388 | 9 | - | 7 | - | 5 | 3 | - | - | 5 |
| V.I. | - | U | - | U | - | 4 | - | U | 5 | U | - | - | U | - | - |
| Amer. Samoa | - | U | 1 | U | - | - | - | U | 2 | U | - | - | U | - | - |
| C.N.M.I. | - | U | - | U | - | - | - | U | 5 | U | - | - | U | - | - |

*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International §Out-of-state

**TABLE II. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending June 16, 1990, and June 17, 1989 (24th Week)**

| Reporting Area | Syphilis (Civilian) (Primary & Secondary) | | Toxic-shock Syndrome | Tuberculosis | | Tula-remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1990 | Cum. 1989 | Cum. 1990 | Cum. 1990 | Cum. 1989 | Cum. 1990 | Cum. 1990 | Cum. 1990 | Cum. 1990 |
| UNITED STATES | 22,112 | 19,192 | 150 | 9,318 | 9,279 | 30 | 155 | 105 | 1,838 |
| NEW ENGLAND | 861 | 775 | 11 | 224 | 232 | - | 11 | 3 | 3 |
| Maine | 5 | 5 | 3 | - | 3 | - | - | - | - |
| N.H. | 39 | 4 | 1 | 3 | 14 | - | - | - | 2 |
| Vt. | 1 | - | - | 2 | 4 | - | - | - | - |
| Mass. | 328 | 234 | 6 | 123 | 118 | - | 10 | 2 | - |
| R.I. | 6 | 14 | - | 31 | 30 | - | - | - | - |
| Conn. | 482 | 518 | 1 | 65 | 63 | - | 1 | 1 | 1 |
| MID. ATLANTIC | 4,852 | 3,927 | 13 | 2,393 | 1,807 | 1 | 47 | 5 | 419 |
| Upstate N.Y. | 357 | 383 | 4 | 210 | 157 | - | 8 | 1 | 19 |
| N.Y. City | 2,101 | 1,631 | 4 | 1,408 | 1,026 | - | 25 | - | - |
| N.J. | 757 | 632 | - | 413 | 293 | 1 | 12 | 4 | 120 |
| Pa. | 1,637 | 1,281 | 5 | 362 | 331 | - | 2 | - | 280 |
| E.N. CENTRAL | 1,399 | 724 | 40 | 933 | 994 | - | 19 | 10 | 47 |
| Ohio | 236 | 52 | 15 | 142 | 184 | - | 4 | 7 | 3 |
| Ind. | 23 | 31 | 2 | 69 | 84 | - | - | - | - |
| Ill. | 520 | 332 | 5 | 464 | 454 | - | 11 | - | 15 |
| Mich. | 463 | 268 | 18 | 219 | 215 | - | 3 | 3 | 7 |
| Wis. | 157 | 41 | - | 39 | 57 | - | 1 | - | 22 |
| W.N. CENTRAL | 197 | 152 | 19 | 248 | 249 | 11 | - | 11 | 283 |
| Minn. | 46 | 11 | - | 46 | 51 | - | - | - | 101 |
| Iowa | 29 | 17 | 4 | 31 | 28 | - | - | - | 10 |
| Mo. | 98 | 78 | 11 | 115 | 106 | 9 | - | 9 | 10 |
| N. Dak. | 1 | 1 | - | 10 | 9 | - | - | - | 40 |
| S. Dak. | 1 | - | - | 6 | 12 | 1 | - | - | 90 |
| Nebr. | 6 | 17 | 2 | 13 | 10 | 1 | - | - | 4 |
| Kans. | 16 | 28 | 2 | 27 | 33 | - | - | 2 | 28 |
| S. ATLANTIC | 7,107 | 7,038 | 7 | 1,843 | 1,933 | 3 | 14 | 37 | 527 |
| Del. | 90 | 77 | 1 | 20 | 21 | - | - | 1 | 7 |
| Md. | 543 | 342 | - | 152 | 171 | - | 7 | 2 | 198 |
| D.C. | 431 | 422 | 1 | 71 | 78 | - | - | - | - |
| Va. | 379 | 258 | - | 157 | 166 | 1 | 1 | 2 | 90 |
| W. Va. | 7 | 8 | - | 35 | 38 | - | - | - | 15 |
| N.C. | 828 | 426 | 3 | 219 | 222 | 1 | - | 20 | 3 |
| S.C. | 430 | 363 | 1 | 229 | 226 | 1 | - | 11 | 66 |
| Ga. | 1,776 | 1,589 | - | 288 | 286 | - | 1 | 1 | 102 |
| Fla. | 2,623 | 3,553 | 1 | 672 | 725 | - | 5 | - | 46 |
| E.S. CENTRAL | 1,878 | 1,185 | 6 | 757 | 794 | 3 | 1 | 12 | 93 |
| Ky. | 31 | 25 | 1 | 190 | 178 | 1 | 1 | 1 | 24 |
| Tenn. | 721 | 503 | 3 | 203 | 228 | 2 | - | 9 | 27 |
| Ala. | 614 | 390 | 2 | 243 | 224 | - | - | 2 | 42 |
| Miss. | 512 | 267 | - | 121 | 164 | - | - | - | - |
| W.S. CENTRAL | 3,496 | 2,488 | 7 | 1,170 | 1,094 | 10 | 3 | 22 | 239 |
| Ark. | 218 | 164 | - | 119 | 118 | 6 | - | 1 | 22 |
| La. | 1,056 | 566 | 1 | 115 | 137 | - | - | 1 | - |
| Okla. | 102 | 39 | 6 | 92 | 100 | 4 | 1 | 18 | 69 |
| Tex. | 2,120 | 1,719 | - | 844 | 739 | - | 2 | 2 | 148 |
| MOUNTAIN | 401 | 334 | 19 | 207 | 222 | 1 | 9 | 3 | 83 |
| Mont. | - | 1 | - | 10 | 7 | - | - | - | 25 |
| Idaho | 6 | 1 | 1 | 6 | 8 | - | - | - | - |
| Wyo. | - | 3 | 2 | 1 | - | - | - | - | 28 |
| Colo. | 20 | 51 | 6 | 6 | 18 | - | - | - | - |
| N. Mex. | 20 | 12 | 3 | 43 | 40 | 1 | - | 1 | 5 |
| Ariz. | 287 | 92 | 5 | 104 | 108 | - | - | 2 | 22 |
| Utah | 4 | 11 | 2 | 12 | 19 | - | 7 | - | 1 |
| Nev. | 64 | 163 | - | 25 | 22 | - | 2 | - | 2 |
| PACIFIC | 1,921 | 2,569 | 28 | 1,543 | 1,954 | 1 | 51 | 2 | 144 |
| Wash. | 146 | 198 | 4 | 125 | 104 | 1 | 1 | - | - |
| Oreg. | 66 | 129 | - | 57 | 64 | - | 1 | - | - |
| Calif. | 1,695 | 2,234 | 23 | 1,273 | 1,682 | - | 46 | 2 | 122 |
| Alaska | 6 | 2 | - | 19 | 30 | - | - | - | 22 |
| Hawaii | 8 | 6 | 1 | 69 | 74 | - | 3 | - | - |
| Guam | 1 | 4 | - | 14 | 39 | - | - | - | - |
| P.R. | 175 | 249 | - | 51 | 151 | - | - | - | 23 |
| V.I. | 1 | 2 | - | 4 | 4 | - | - | - | - |
| Amer. Samoa | - | - | - | 6 | 2 | - | - | - | - |
| C.N.M.I. | 1 | 7 | - | 14 | 7 | - | 4 | - | - |

## TABLE III. Deaths in 121 U.S. cities,* week ending June 16, 1990 (24th Week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I** |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | Total |
| NEW ENGLAND | 605 | 429 | 95 | 51 | 13 | 16 | 47 |
| Boston, Mass. | 159 | 86 | 34 | 23 | 6 | 9 | 13 |
| Bridgeport, Conn. | 34 | 26 | 3 | 4 | 1 | - | 2 |
| Cambridge, Mass. | 19 | 12 | 5 | 2 | - | - | 2 |
| Fall River, Mass. | 20 | 19 | 1 | - | - | - | 1 |
| Hartford, Conn.§ | 54 | 37 | 11 | 6 | - | - | 5 |
| Lowell, Mass. | 28 | 22 | 4 | 1 | 1 | - | 1 |
| Lynn, Mass. | 16 | 14 | 2 | - | - | - | 3 |
| New Bedford, Mass. | 22 | 18 | 3 | 1 | - | - | 2 |
| New Haven, Conn. | 46 | 35 | 5 | 2 | 2 | 2 | 3 |
| Providence, R.I. | 46 | 33 | 8 | 4 | 1 | - | 2 |
| Somerville, Mass. | 4 | 4 | - | - | - | - | - |
| Springfield, Mass. | 42 | 32 | 5 | 3 | - | 2 | 2 |
| Waterbury, Conn. | 39 | 32 | 4 | 1 | - | 2 | 6 |
| Worcester, Mass. | 76 | 59 | 10 | 4 | 2 | 1 | 5 |
| MID. ATLANTIC | 2,699 | 1,719 | 528 | 302 | 61 | 89 | 166 |
| Albany, N.Y. | 42 | 30 | 8 | 1 | 1 | 2 | 2 |
| Allentown, Pa. | 21 | 18 | 3 | - | - | - | - |
| Buffalo, N.Y. | 112 | 83 | 19 | 5 | 3 | 2 | 4 |
| Camden, N.J. | 33 | 22 | 7 | - | - | 4 | - |
| Elizabeth, N.J. | 20 | 12 | 5 | 2 | 1 | - | 4 |
| Erie, Pa.† | 47 | 36 | 6 | 2 | 1 | 2 | 4 |
| Jersey City, N.J. | 169 | 102 | 31 | 24 | 1 | 11 | 2 |
| N.Y. City, N.Y. | 1,395 | 853 | 281 | 186 | 36 | 39 | 70 |
| Newark, N.J. | 61 | 31 | 12 | 14 | 2 | 2 | 5 |
| Paterson, N.J. | 34 | 16 | 7 | 9 | 2 | - | 2 |
| Philadelphia, Pa. | 300 | 186 | 63 | 29 | 9 | 13 | 26 |
| Pittsburgh, Pa.† | 103 | 63 | 23 | 9 | - | 8 | 6 |
| Reading, Pa. | 36 | 29 | 6 | 1 | - | - | 6 |
| Rochester, N.Y. | 135 | 98 | 24 | 8 | 3 | 2 | 20 |
| Schenectady, N.Y. | 22 | 16 | 5 | 1 | - | - | 1 |
| Scranton, Pa.† | 30 | 20 | 7 | 1 | - | 2 | 2 |
| Syracuse, N.Y. | 71 | 53 | 9 | 6 | 1 | 2 | 2 |
| Trenton, N.J. | 27 | 20 | 4 | 2 | 1 | - | - |
| Utica, N.Y. | 16 | 13 | 2 | 1 | - | - | 1 |
| Yonkers, N.Y. | 25 | 18 | 6 | 1 | - | - | 9 |
| E.N. CENTRAL | 2,231 | 1,446 | 472 | 176 | 62 | 75 | 91 |
| Akron, Ohio | 19 | 15 | 3 | 1 | - | - | - |
| Canton, Ohio | 28 | 22 | 3 | 2 | 1 | - | 2 |
| Chicago, Ill.§ | 564 | 362 | 125 | 45 | 10 | 22 | 16 |
| Cincinnati, Ohio | 128 | 96 | 24 | 7 | 1 | - | 15 |
| Cleveland, Ohio | 179 | 106 | 48 | 10 | 9 | 6 | 4 |
| Columbus, Ohio | 153 | 103 | 33 | 12 | 2 | 3 | 2 |
| Dayton, Ohio | 101 | 64 | 24 | 6 | 5 | 2 | 3 |
| Detroit, Mich. | 222 | 108 | 57 | 31 | 14 | 12 | 6 |
| Evansville, Ind. | 56 | 40 | 7 | 5 | 2 | 2 | 1 |
| Fort Wayne, Ind. | 72 | 47 | 17 | 6 | - | 2 | 3 |
| Gary, Ind. | 13 | 6 | 4 | 3 | - | - | 1 |
| Grand Rapids, Mich. | 49 | 31 | 12 | 2 | 2 | 2 | 2 |
| Indianapolis, Ind. | 181 | 114 | 34 | 19 | 8 | 6 | 1 |
| Madison, Wis. | 33 | 22 | 9 | 2 | - | - | 3 |
| Milwaukee, Wis. | 131 | 94 | 18 | 10 | 4 | 5 | 9 |
| Peoria, Ill. | 43 | 26 | 14 | - | - | 3 | 5 |
| Rockford, Ill. | 32 | 24 | 5 | - | 1 | 2 | 4 |
| South Bend, Ind. | 38 | 31 | 5 | 1 | - | 1 | 2 |
| Toledo, Ohio | 95 | 65 | 17 | 6 | 3 | 4 | 3 |
| Youngstown, Ohio | 94 | 70 | 13 | 8 | - | 3 | 9 |
| W.N. CENTRAL | 785 | 555 | 134 | 52 | 21 | 22 | 40 |
| Des Moines, Iowa | 86 | 58 | 18 | 2 | 3 | 5 | 5 |
| Duluth, Minn. | 27 | 18 | 7 | 1 | - | 1 | - |
| Kansas City, Kans. | 34 | 19 | 7 | 3 | 3 | 1 | - |
| Kansas City, Mo. | 117 | 90 | 15 | 9 | - | 3 | 9 |
| Lincoln, Nebr. | 33 | 26 | 5 | - | 2 | - | 4 |
| Minneapolis, Minn. | 164 | 117 | 26 | 15 | 1 | 5 | 15 |
| Omaha, Nebr. | 71 | 54 | 12 | 2 | 3 | - | 3 |
| St. Louis, Mo. | 151 | 102 | 25 | 14 | 6 | 4 | 3 |
| St. Paul, Minn. | 52 | 38 | 10 | 1 | 3 | - | 1 |
| Wichita, Kans. | 50 | 33 | 9 | 5 | - | 3 | - |
| S. ATLANTIC | 1,322 | 789 | 266 | 169 | 51 | 46 | 62 |
| Atlanta, Ga. | 164 | 87 | 32 | 29 | 10 | 6 | 3 |
| Baltimore, Md. | 245 | 145 | 55 | 32 | 6 | 7 | 12 |
| Charlotte, N.C. | 87 | 56 | 24 | 6 | 1 | - | 9 |
| Jacksonville, Fla. | 97 | 55 | 19 | 15 | 5 | 3 | 7 |
| Miami, Fla. | 134 | 76 | 23 | 29 | 4 | 2 | - |
| Norfolk, Va. | 44 | 28 | 6 | 5 | 2 | 3 | 6 |
| Richmond, Va. | 84 | 58 | 11 | 7 | 5 | 3 | 10 |
| Savannah, Ga. | 44 | 33 | 9 | 2 | - | - | 4 |
| St. Petersburg, Fla. | 86 | 66 | 5 | 7 | 5 | 3 | 3 |
| Tampa, Fla. | 77 | 38 | 21 | 7 | 3 | 7 | 2 |
| Washington, D.C.§ | 243 | 134 | 57 | 30 | 10 | 12 | 6 |
| Wilmington, Del. | 17 | 13 | 4 | - | - | - | - |
| E.S. CENTRAL | 849 | 570 | 174 | 70 | 23 | 12 | 55 |
| Birmingham, Ala. | 139 | 93 | 32 | 6 | 7 | 1 | 3 |
| Chattanooga, Tenn. | 65 | 48 | 12 | 4 | 1 | - | 8 |
| Knoxville, Tenn. | 105 | 70 | 25 | 7 | 1 | 2 | 11 |
| Louisville, Ky. | 105 | 61 | 29 | 11 | - | 4 | 5 |
| Memphis, Tenn. | 163 | 104 | 32 | 18 | 6 | 3 | 19 |
| Mobile, Ala. | 107 | 77 | 18 | 10 | 2 | - | 3 |
| Montgomery, Ala. | 52 | 33 | 12 | 4 | 3 | - | 1 |
| Nashville, Tenn. | 113 | 84 | 14 | 10 | 3 | 2 | 5 |
| W.S. CENTRAL | 1,775 | 1,107 | 365 | 180 | 71 | 52 | 70 |
| Austin, Tex. | 75 | 43 | 16 | 7 | 4 | 5 | 6 |
| Baton Rouge, La. | 46 | 31 | 6 | 6 | 2 | 1 | 4 |
| Corpus Christi, Tex. | 49 | 38 | 7 | 4 | - | - | 4 |
| Dallas, Tex. | 180 | 104 | 38 | 22 | 10 | 6 | 3 |
| El Paso, Tex. | 71 | 43 | 15 | 7 | 2 | 4 | 3 |
| Fort Worth, Tex | 69 | 46 | 11 | 7 | 3 | 2 | 7 |
| Houston, Tex.§ | 734 | 436 | 169 | 89 | 24 | 16 | 18 |
| Little Rock, Ark. | 82 | 51 | 19 | 5 | 4 | 3 | 2 |
| New Orleans, La. | 160 | 108 | 24 | 12 | 11 | 5 | - |
| San Antonio, Tex. | 152 | 95 | 29 | 15 | 7 | 6 | 9 |
| Shreveport, La. | 46 | 32 | 11 | - | 2 | 1 | 3 |
| Tulsa, Okla. | 111 | 80 | 20 | 6 | 2 | 3 | 11 |
| MOUNTAIN | 661 | 407 | 126 | 83 | 24 | 21 | 34 |
| Albuquerque, N. Mex. | 85 | 59 | 15 | 7 | 1 | 3 | 6 |
| Colo. Springs, Colo. | 35 | 18 | 10 | 4 | 2 | 1 | 4 |
| Denver, Colo. | 74 | 49 | 9 | 11 | 4 | 1 | 3 |
| Las Vegas, Nev. | 109 | 67 | 24 | 15 | 2 | 1 | 4 |
| Ogden, Utah | 29 | 16 | 8 | 2 | 2 | 1 | 2 |
| Phoenix, Ariz. | 148 | 80 | 31 | 24 | 7 | 6 | 2 |
| Pueblo, Colo. | 23 | 20 | 2 | - | - | 1 | 6 |
| Salt Lake City, Utah | 38 | 16 | 9 | 5 | 5 | 3 | 1 |
| Tucson, Ariz. | 120 | 82 | 18 | 15 | 1 | 4 | 6 |
| PACIFIC | 1,992 | 1,271 | 375 | 217 | 82 | 39 | 134 |
| Berkeley, Calif. | 22 | 15 | 7 | - | - | - | 2 |
| Fresno, Calif. | 66 | 43 | 12 | 4 | 4 | 3 | 9 |
| Glendale, Calif.§ | 25 | 20 | 4 | 1 | - | - | 1 |
| Honolulu, Hawaii | 77 | 55 | 14 | 5 | 2 | 1 | 13 |
| Long Beach, Calif. | 85 | 54 | 12 | 12 | 6 | 1 | 8 |
| Los Angeles Calif.§ | 549 | 341 | 108 | 65 | 25 | 4 | 24 |
| Oakland, Calif. | 76 | 47 | 10 | 4 | 7 | 8 | 2 |
| Pasadena, Calif. | 35 | 26 | 6 | 2 | 1 | - | 1 |
| Portland, Oreg. | 122 | 86 | 21 | 10 | 3 | 2 | 5 |
| Sacramento, Calif. | 162 | 95 | 40 | 14 | 8 | 5 | 16 |
| San Diego, Calif. | 173 | 107 | 33 | 17 | 10 | 5 | 24 |
| San Francisco, Calif. | 174 | 99 | 30 | 37 | 5 | 2 | 3 |
| San Jose, Calif. | 162 | 108 | 33 | 13 | 5 | 3 | 10 |
| Seattle, Wash. | 168 | 107 | 32 | 22 | 5 | 2 | 3 |
| Spokane, Wash. | 60 | 43 | 8 | 7 | - | 2 | 10 |
| Tacoma, Wash. | 36 | 25 | 5 | 4 | 1 | 1 | 3 |
| TOTAL | 12,919†† | 8,293 | 2,535 | 1,300 | 408 | 372 | 699 |

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

**Pneumonia and influenza.

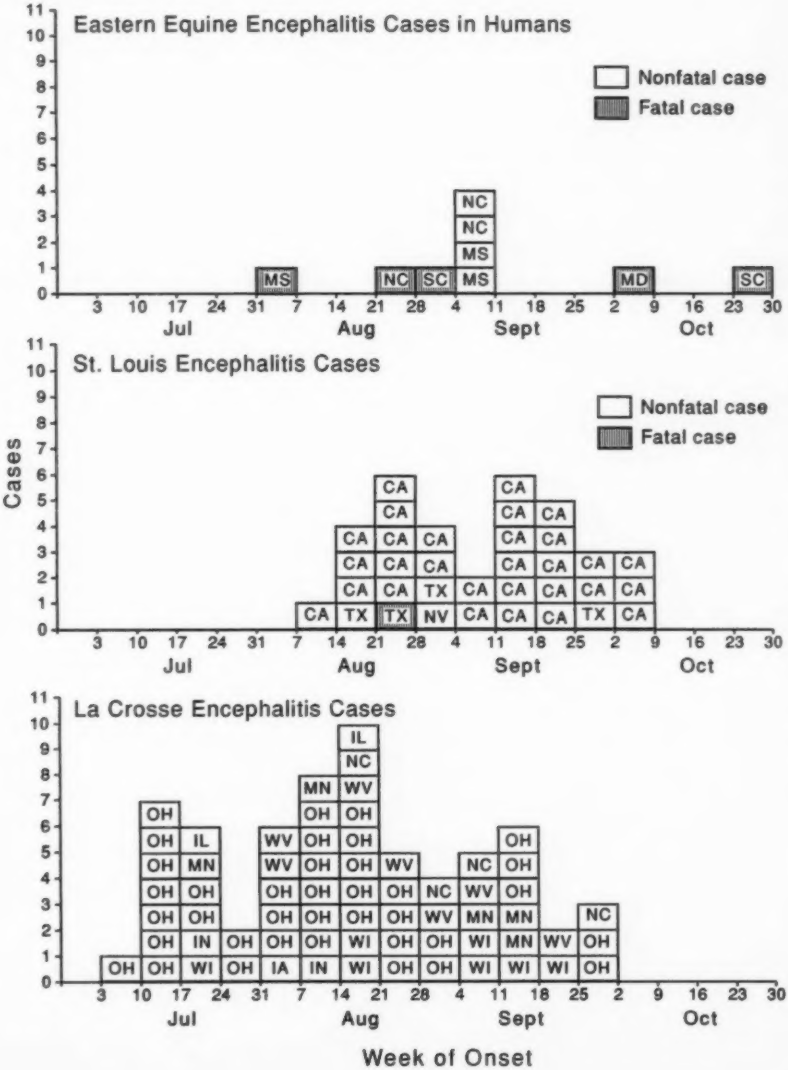
†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

§Data not available. Figures are estimates based on average of past available 4 weeks.

*Arboviral Infections — Continued*

**FIGURE 1. Arboviral infections of the central nervous system, by week of onset — United States, 1989**



*Arboviral Infections — Continued*

cases and nine human cases (five fatal) occurred (Figure 2). Central nervous system infections from viruses of the California serogroup, principally La Crosse encephalitis, were reported among 65 persons from six midwestern and two eastern states where the disease is endemic. No human cases of western equine encephalitis (WEE) were reported.

**St. Louis Encephalitis**

From August through early October, the SLE outbreak in Kern, Kings, and Tulare counties in the lower San Joaquin Valley of California resulted in 28 of the 29 cases reported in the state, a rate of 3.1 per 100,000 population. Cases were identified from passive reports and from a subsequent retrospective serosurvey of hospitalized persons with potential cases in the three-county area. Seventeen cases occurred in males (male-to-female ratio of 1.6:1). The age-specific incidence rate per 100,000 population for children $<$15 years of age was 2.1; for persons 15–34 years of age, 2.9; for persons 35–54 years of age, 3.6; and for persons $\geq$55 years of age, 2.6.

The other SLE case from California occurred in a 65-year-old man who resided east of the coastal mountains in Los Angeles County; this case was epidemiologically unrelated to the outbreak in the Central Valley. Elsewhere, sporadically occurring SLE cases were reported in a 78-year-old man from Lyon County, Nevada, and in two men and two women (age range: 20–39 years) who resided in the inner city of Houston; one case was fatal (Figure 1).

**Eastern Equine Encephalitis**

In 1989, evidence of EEE transmission was first documented in March among horses in Florida. In June and July, equine cases were reported from southeastern

**FIGURE 2. Equine and human eastern equine encephalitis cases, by county — United States, 1989**

*Arboviral Infections — Continued*

states, and by August, equine cases were reported from the northeast (Figure 2). The epizootic resulted in 194 cases from 116 counties in 14 states. The first human case was reported from Mississippi in August; eight additional human cases were reported through October from Maryland, Mississippi, North Carolina, and South Carolina. Of the nine cases, eight were in males; patients ranged in age from 5 months to 68 years. Five cases were fatal, and three of the surviving patients had neurologic sequelae.

**La Crosse Encephalitis**

Eight states reported 65 cases of La Crosse encephalitis: Ohio (37 cases); West Virginia and Wisconsin (seven cases each); Minnesota (five cases); North Carolina (four cases); Illinois and Indiana (two cases each); and Iowa (one case).

Cases occurred from early July through early October. Sixty-four cases were in persons $<$20 years of age. Forty-four cases occurred in males (male-to-female ratio of 2.1:1).

*Reported by: S Minkin, MD, Kings County Dept of Health; M MacLean, MD, Tulare County Dept of Health; J Tueller, MD, R Murray, PhD, Infectious Disease Section, California Dept of Health Svcs. H Rubin, Florida Dept of Agriculture and Consumer Svcs. M Sinsko, PhD, Indiana State Board of Health. RW Currier, DVM, Iowa Dept of Public Health. M Greco, DVM, Maryland State Dept of Health and Mental Hygiene. C Hedberg, Minnesota Dept of Health. M Currier, DVM, H McCrory, DVM, B Bracken, MPH, Mississippi State Dept of Health. D Brus, DVM, Div of Health, Nevada State Dept of Human Resources. JN MacCormack, MD, State Epidemiologist, Div of Health Svcs, North Carolina Dept of Human Resources. E Petersen, Vector-Borne Disease Unit, Ohio Dept of Health. J Jones, MD, South Carolina Dept of Health and Environmental Control. D Sprenger, PhD, J Papas, Harris County Mosquito Control District, Houston, Texas. LE Haddy, MS, West Virginia Dept of Health and Human Resources. W Schell, Wisconsin Dept of Health and Social Svcs. Various other state and local health departments. L Peterson, DVM, National Veterinary Diagnostic Laboratory, US Dept of Agriculture, Ames, Iowa. Div of Vector-Borne Infectious Diseases, Center for Infectious Diseases; Div of Field Svcs, Epidemiology Program Office, CDC.*

**Editorial Note**: SLE and WEE are endemic in the rural West. In most years, sporadic cases occur (*1–3*) and, occasionally, small outbreaks occur. In the 1940s and 1950s, California's Central Valley was the site of recurrent combined SLE and WEE outbreaks (*4,5*). During 1945–1959, 646 cases of WEE and 387 cases of SLE were reported from the Sacramento and San Joaquin valleys. In the 1960s, reported cases gradually diminished; during the 1970s and 1980s, reports of these arboviral infections had virtually disappeared from the Central Valley.

Suggested hypotheses to explain the decline in human cases include the increased use of agricultural pesticides, reduced outdoor exposure in local residents as a consequence of increased use of air conditioning, and other human behavioral factors (*6,7*). However, the reasons for the disappearance and subsequent recurrence of SLE in the Central Valley in 1989 are unclear. The absence of WEE cases in the outbreak is especially perplexing because SLE and WEE are transmitted by *Culex tarsalis* mosquitoes in the rural West and share a similar summer amplification cycle involving birds (*1,3,4,8*).

The sex distribution of patients in the California outbreak was typical of rural SLE outbreaks, probably reflecting increased outdoor exposure among males because of occupational and other activities (*1,4*). In addition, the age distribution of patients, which indicated equal risk of the disease across all age groups, is typical of the epidemiology of SLE in the rural West (*1,4*).

*Arboviral Infections — Continued*

In the South, SLE is transmitted by *Cx. quinquefasciatus*, a peridomestic mosquito often present in greatest abundance in old neighborhoods, where breeding sites in discarded containers and open ditches may be prevalent (*1,3,8*). In Houston, old central city neighborhoods have consistently been the areas of greatest risk for SLE (*9*). Risk of clinical encephalitis after infection with SLE virus increases with age, and most cases are identified among the elderly (*1,2,9*). Thus, the predominance of relatively younger patients in Houston in 1989 was atypical.

EEE is rare in humans; since 1955, a median of three cases have been reported annually in the United States. Only one major outbreak of EEE has been reported in the United States; in 1959, 32 cases occurred in coastal New Jersey (*10*). Epizootics among horses have occurred more frequently; however, the size of these outbreaks has diminished with the use of equine vaccines.

In 1989, record numbers of *Culiseta melanura*, the principal enzootic vector of EEE, were observed in some eastern seaboard locations where the mosquito's abundance has been monitored longitudinally (*11*). Mosquitoes of various species that could serve as epizootic vectors (e.g., *Aedes sollicitans*) also were present in unprecedented numbers in some coastal locations (*12*). The effect of locally heavy rainfall in the last quarter of 1988 through the spring of 1989 may have contributed to the expansion of vector populations and increased EEE virus transmission in these areas.

The encephalitis associated with EEE is fulminant and causes death in 30%–69% of cases (*2,10,13*). The sex distribution of patients reported in 1989 was unusual and remains unexplained.

La Crosse encephalitis is endemic in the upper midwest and in areas of the Appalachian states and parts of the Southeast (*2,13*). The epidemiologic characteristics of cases reported in 1989 were typical. Cases occurred almost exclusively in children and were slightly more predominant in males, probably because of increased exposure to the woodland mosquito vector, *Ae. triseriatus*.

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## *Notices to Readers*

### NIOSH Guidelines for Protecting the Safety and Health of Health-Care Workers

Compared with the total civilian population, health-care workers file a greater number of workers' compensation claims for sprains and strains, infections, parasitic diseases, dermatitis, viral hepatitis, mental disorders, eye diseases, influenza, and toxic hepatitis. To help reduce the incidence of injury and disease among health-care workers, CDC's National Institute for Occupational Safety and Health (NIOSH) has published *Guidelines for Protecting the Safety and Health of Health Care Workers* (*1*).*

This comprehensive publication addresses all major health and safety hazards that workers encounter in hospitals and other health-care facilities. It includes an overview of hospital hazards; methods for developing hospital safety and health programs; methods for disposing of hazardous wastes; a list of occupational safety and health agencies and resource organizations; and discussions of safety hazards, infectious diseases, and noninfectious health hazards.

The guidelines presented in this document incorporate the Occupational Safety and Health Administration regulations and the most recent CDC-recommended NIOSH standards and guidelines, including those for protecting health-care workers from occupational transmission of hepatitis B virus, human immunodeficiency virus, and other bloodborne pathogens. The document also contains specific information from the Joint Commission on Accreditation of Healthcare Organizations, the National Fire Protection Association, and the Environmental Protection Agency.

*Reported by: Div of Standards Development and Technology Transfer, National Institute for Occupational Safety and Health, CDC.*

*Reference*

1. NIOSH. Guidelines for protecting the safety and health of health care workers. Cincinnati, Ohio: US Department of Health and Human Services, Public Health Service, CDC, 1988; DHHS publication no. (NIOSH)88-119.

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*Single copies are available without charge from the Publications Dissemination Section, DSDTT, National Institute for Occupational Safety and Health, CDC, 4676 Columbia Parkway, Cincinnati, Ohio 45226; telephone (513) 533-8287.

### NIOSH Current Intelligence Bulletins on Workplace Hazards

On July 13, 1989, CDC's National Institute for Occupational Safety and Health (NIOSH) published Current Intelligence Bulletins (CIBs) on propylene oxide (*1* ) and on ethylene oxide (*2* ). These publications are two in a series that provide new or updated

*NIOSH Bulletins — Continued*

information on chemical substances, physical agents, and safety hazards in the workplace. These bulletins, which are described below, are now available to the public.*

*CIB 51: Carcinogenic Effects of Exposure to Propylene Oxide.* NIOSH recommends that propylene oxide be regarded as a potential occupational carcinogen. This recommendation is based on the results of animal studies confirming that the chemical is a direct-acting carcinogen. Nasal tumors were induced in both rats and mice exposed to propylene oxide by inhalation. Rats given the chemical by gavage developed squamous cell carcinomas in the forestomach. No epidemiologic data are available for the estimated 200,000 workers exposed to propylene oxide.

U.S. production of propylene oxide in 1980 was approximately 1.8 billion pounds. Most propylene oxide is used as an intermediate in the production of polyether polyols used to manufacture polyurethane foam and in the production of propylene glycol for unsaturated polyester resins. Minor quantities are used for sterilizing medical equipment and for fumigating foodstuffs.

The findings of cancer and other tumors in both rats and mice treated with propylene oxide meet the criteria established in the Occupational Safety and Health Administration (OSHA) Cancer Policy (*3*) for regarding it as a potential occupational carcinogen. As a result, NIOSH recommends reducing exposure to the lowest feasible concentration.

*CIB 52: Ethylene Oxide Sterilizers in Health-Care Facilities: Engineering Controls and Work Practices.* CIB 52 identifies potential sources of ethylene oxide (EtO) exposure from gas sterilizers in health-care facilities and describes control methods recommended by NIOSH. The 1981 NIOSH publication *CIB 35: Ethylene Oxide (EtO)* indicated that EtO was carcinogenic in animals and produced adverse reproductive effects in mammals (*4*); subsequent animal studies support these findings.

In addition, NIOSH has conducted and reviewed recent research on control methods and work practices designed to protect workers employed near EtO sterilizers in health-care facilities and has developed recommendations for the general and specific control of these exposures. General control methods include equipment maintenance, workplace monitoring, a good respiratory protection program, and labeling and posting of hazards. The specific methods include using engineering controls, good work practices, and personal protective equipment.

These recommendations will assist employers in complying with OSHA's current regulations. OSHA has lowered the permissible exposure limit for EtO and recently added an excursion limit.

*Reported by: Div of Standards Development and Technology Transfer, National Institute for Occupational Safety and Health, CDC.*

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1. NIOSH. Carcinogenic effects of exposure to propylene oxide. Cincinnati, Ohio: US Department of Health and Human Services, Public Health Service, CDC, 1989; DHHS publication no. (NIOSH)89-111. (Current intelligence bulletin no. 51).
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*Single copies of the bulletins are available without charge from the Publications Dissemination Section, DSDTT, National Institute for Occupational Safety and Health, CDC, 4676 Columbia Parkway, Cincinnati, Ohio 45226; telephone (513) 533-8287.

*NIOSH Bulletins — Continued*

3. Office of the Federal Register. Code of federal regulations: labor. Part 1990: identification, classification, and regulation of potential occupational carcinogens—the OSHA Cancer Policy. Washington, DC: Office of the Federal Register, National Archives and Records Administration, 1988. (29 CFR §1990-112).
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The *Morbidity and Mortality Weekly Report* is prepared by the Centers for Disease Control, Atlanta, Georgia, and available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238.

The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.



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